UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Prodromos Pericles Stephanos	)	Date: March 13, 2003
Application No. 09/756,597	)	Group Art Unit: 1714
Filed: January 5, 2001	)	Examiner: Cephia Toomer
For: Lighter Fluid Composition	)	Attorney Ref. No.: 130.01

#19/m
3/31/03

Declaration of Prodromos Pericles Stephanos

I, Prodromos Pericles Stephanos, am the inventor of the composition covered by the above-referenced patent application. I declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true.

Background

1. The above-referenced patent application relates to an environmentally-friendly lighter fluid that I developed.

2. I began working in early 1995 to develop a lighter fluid composition. As I was working on this project, I learned that there was much concern about harmful emissions from lighter fluids, particularly volatile organic compounds (VOCs). Many air quality districts throughout the country were worried about these emissions, and some had implemented regulations governing the maximum amount of VOCs that could be emitted.

3. In particular, the South Coast Air Quality Management District (SCAQMD), which has jurisdiction over much of Southern California, promulgated an emission limit of 0.020 pounds of VOC's per barbecue charcoal ignition. On information and belief, I understand that many traditional lighter fluids are unable to meet this standard.

4. Thus, when I began working on my new lighter fluid composition, one of my primary objectives was to create a product that would comply with SCAQMD's

burning and pleasant-smelling product.

5. As a result of much experimentation, I came up with the formulation that is covered by the present patent application. Unlike traditional lighter fluids, my new composition does not rely on petrochemical distillates, but instead uses terpene or terpenoid oil and a short chain alcohol in an emulsion to initiate combustion of the charcoals.

6. Additionally, unlike traditional lighter fluids, my composition uses a thickening agent to make the fluid into a liquid gel.

7. Also, my product is an emulsion, unlike traditional fluids (and the fluid of the Wilkins 5,252,107 patent), which are single phase homogeneous liquids. These differences between my product and the prior art result in a number of advantages, as explained below.

Advantages

Lower VOC Emissions

8. First, my lighter fluid emits fewer VOCs than the same amount of traditional lighter fluid. Indeed, my fluid has been tested and found to comply with the SCAQMD's emission limit. A true and correct copy of a summary of these test results is attached as Exhibit A.

9. My product has lower VOC emissions for a number of reasons. First, as compared to other fluids, the combination of terpene and terpenoid oil with a short chain alcohol inherently releases fewer VOCs than petrochemical-based ligher fluids.

10. Second, because it is a gel, my product does not significantly soak into the charcoals, unlike liquid lighter fluids. After liquid lighter fluid soaks into the charcoals, some of the fuel is wicked out for burning, but some fuel remains in the charcoal, unburned. This unburned fuel is then left to "boil off," releasing VOCs into the atmosphere. My invention, on the other hand, does not significantly soak into the coals, and therefore burns more completely, leaving fewer VOCs.

11. Additionally, the thickening agent in my invention retards the evaporation rate, and therefore reduces the VOC emissions.

12. Moreover, because it is a gel, my product has a longer burn time than conventional lighter fluid. With a longer burn time, less fuel is needed, and the fuel that is used burns more completely. This further reduces VOC emissions.

13. Finally, because it is a gelled emulsion and has a creamy consistency along with an opaque color, consumers can easily see how much of my lighter fluid they are applying, unlike clear liquid lighter fluid. Consumers tend to overuse traditional lighter fluid, because they cannot see how much they are applying. By making it easier for consumers to see and use the *right* amount of gel, my product helps to ensure that fewer VOCs are released from the result of improper application and the application of excess and unneeded fluid.

14. Thus, my fluid has lower VOC emissions for the following reasons:

- the constituents of my composition – terpenes and alcohol instead of petrochemical distillates --release fewer VOCs;
- because it is a gel that does not significantly soak into the coals, my product is less prone to "boil off" unused fuel;
- because it is a gel, my product has a lower evaporation rate than conventional lighter fluid;
- because it is a gel, my product has a longer burn time, thereby decreasing the amount of fluid needed and increasing the proportion of fuel burned; and
- because it is a gelled emulsion, my product helps consumers to see how much product they are using, thereby decreasing waste and unneeded application of gel which results in lower VOC emissions.

15. I understand that the examiner has rejected my application because she found that it would have been obvious to combine the Wesley patent (U.S. patent no. 5,773,706) with the Wilkins patent (U.S. patent no. 5,252,107). However, I do not believe

the specific mechanisms described above.

Manufacturing Advantages

16. Because it is an emulsion, my product is easier and less expensive to manufacture than single phase products, like that described in the Wilkins patent. It is easier because the materials mix up quickly and you do not need to wait for my product to become "clear and homogenous." It is less expensive to produce because valuable production time does not need to be consumed waiting for the mixture to become clear. You simply mix and fill the bottle. Furthermore using lower chain alcohols are less expencive.

Consumer Appeal/Safety

17. By using terpenes or terpenoid oils, like orange oil, my product can create a pleasant smell both when the container is opened and when the fire is started.

18. Additionally, since it is a gel, my product is easier for consumers to use, because they can see where and how much they are applying. Also, because it is a gel, my product has a higher auto ignition point and a lower evaporation rate than liquid lighter fluids, which means that it does not "Pop and Flash" upon ignition unlike traditional lighter fluids. In other words, the thickening agent controls the rate of burn so that consumers do not need to fear that my product will flare up in their face upon ignition.

19. Next, I believe that my product does a better job of igniting charcoal. Traditional liquid fluid is applied ***on*** the coals, and is designed to ignite the coals by soaking. This often results in incomplete burning of the charcoal, since this method depends on one burning charcoal briquet lighting another, side by side, to spread the fire. My invention, on the other hand, is designed to be applied through and ***under*** the charcoal, as shown on the attached product label. (Exhibit B hereto). This allows for the flame to ignite the entire bottom of all the coals and for the natural process of heat and flames to rise from bottom to top for a more complete and fast ignition.

20. Finally, as a gel, my product is neater to use and is less likely than liquid lighter

Commercial Success

21. My new product has enjoyed great commercial success, as explained below.

22. I have licensed the rights to my product to Duraflame, which is one of the largest hearth and barbecue companies in America. Although I am obligated by this license to keep its terms secret, the mere fact that a company such as Duraflame would purchase license rights proves the commercial value of my product.

23. Duraflame is currently selling an embodiment of the present invention throughout the country under the product name "Fresh Light." I understand that Fresh Light has been stocked at major retail chains such as Safeway, Albertsons, Bashas, C&S Wholesale, Fleming, Orchard Supply, Sears Hardware, Publix Supermarkets, Ralphs Grocery, Randalls, Stater Brothers, Tom Thumb, Unified Western Grocers, Vons, Winn Dixie, Piggly Wiggly, Krogers, Dominiks, Nob Hill, Cala Foods, Apple Markets, Acme Markets and others. Although the revenue details for Fresh Light are proprietary to Duraflame, I have been informed that during its first year, the total number of units of Fresh Light sold were approximately 250,000. Thus, in a single year, my product grew from a complete unknown to become a product with broad acceptance in the market. I have been informed that my product is expected to achieve tremendous market share and recognition due to its unique qualities. I consider this growth to be especially remarkable because I have no previous experience in creating lighter fluid. I have attached hereto a true and correct copy of a product label (front and back) for Fresh Light.

24. This commercial success is a direct result of the advantages of my product, and does result from some other factor. My invention is not just part of the Fresh Light product -- instead it *is* the Fresh Light product. Fresh Light is nothing other than an embodiment of the invention that I seek to patent.

25. Moreover, the commercial success of "Fresh Light" cannot be attributed to advertising, since Fresh Light has not been the subject of significant advertising, other than some coupons.

26. In sum, I believe that my product marks a major improvement over the prior art, including the Wesley and Wilkins patents.

Executed this 13th day of March, 2003 at Walnut Creek, California

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. I understand that willful false statements and the like are punishable by fine or imprisonment or both, and may jeopardize the validity of the application or any patent issuing thereon.

Prodromos Pericles Stephanos

Exhibit A

HORIZON

AIR MEASUREMENT SERVICES, INC.

S57-005-FR

RULE 1174 BARBECUE IGNITION PRODUCT EMISSION COMPLIANCE TESTING RESULTS

"Sure Light"

Prepared for:

Stephanos & Associates
1255 Juanita Drive
Walnut Creek, California 94549

Prepared by:

Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, California 91320

Richard J. Varbero
Technical Director

HORIZON

AIR MEASUREMENT SERVICES, INC.

December 21, 2000

Mr. Mike Stephanos
Stephanos and Associates
1255 Juanita Drive
Walnut Creek, California 94549

Dear Mr. Stephanos.

Please find enclosed three copies of the final report entitled, "Rule 1174 Barbecue Ignition Product Emission Compliance Testing Results" for the "Sure Light" product.

If you have any questions please call me at (805)498-8781.

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.

Richard J. Vacherot
Technical Director

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Enclosures

2. SUMMARY OF RESULTS

Table 2-1 provides the stack gas characteristics and pound of VOC per start for the six product test runs. The average emission rate is .0.0232 pound VOC (as CH_4) per start (lb VOC/Start).

Table 2-2 provides the stack gas characteristics and pound of VOC per start for each of the six baseline (briquette) test runs. The average emission rate was .0129 lb VOC/Start for the baseline briquette emissions. As per the Rule 1174 Protocol, the following calculation was used to calculate emission rate:

$$0.0232\ lb\ VOC/Start - 0.0129\ lb\ VOC/Start + 0.0080\ lb\ VOC/Start$$

Thus, the "Sure Light" Rule 1174 resultant emission rate is 0.0183 lb VOC/Start, which meets the 0.020 lb VOC/Start limit. No sampling/analytical problems or deviations were encountered during the test program.

2.1 Statistical Analyses

The ratio of standard deviation of the "Sure Light" test runs divided by the average lb VOC/Start:

$$\left(\frac{0.00402\ lb\ VOC/Start}{0.0232\ lb\ VOC/Start}\right)\ is\ 0.173$$

Since this ratio is less than 0.3, no outliers were identified. The ratio of standard deviation of the baseline briquette emissions divided by the average lb VOC/Start:

$$\left(\frac{0.00214\ lb\ VOC/Start}{0.0.0129\ lb\ VOC/Start}\right)\ is\ 0.166$$

Since this ratio is less than 0.3,no outliers were identified.

TABLE 2-1

Rule 1174 Barbecue Ignition Method Emission Results
"Sure Light"
November 21, 2000

	RUN NUMBER						
	1	2	3	4	5	6	Average
Stack Gas Characteristics							
Temperature (°F)	92.4	93.5	94.6	96.4	92.9	90.9	94
Velocity,							
afm	442	464	451	447	434	455	449
sfm	441	463	450	446	433	454	448
Flow Rate (dscfm)	222	232	225	223	218	229	225
VOC Emissions							
Concentration[1] (ppm)	142	109	92.2	128	90.2	118	113.0
Emission Rate[2] (lb VOC/Start)	0.0284	0.0234	0.0188	0.0257	0.0181	0.0246	0.0232
QA/QC Samples (ppm)							
Field Blank	9.30						
Ambient	25.6						

1 Concentration - average of duplicate samples.
2 lb VOC expressed as CH_4.

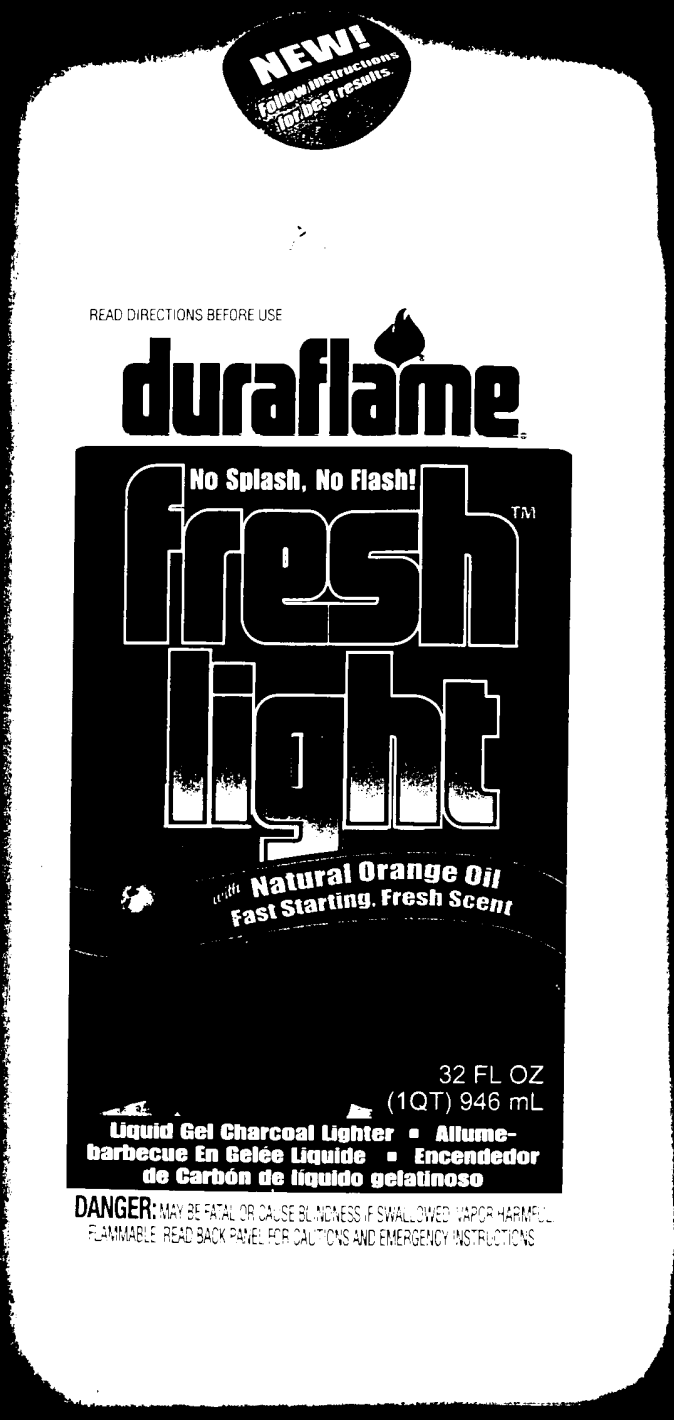
TABLE 2-2

Rule 1174 Barbecue Ignition Method Emission Results
Briquette Baseline (Reference) Lot #M40170
November 30, 2000

	RUN NUMBER						
	1	2	3	4	5	6	Average
Stack Gas Characteristics							
Temperature (°F)	85.4	87.3	91.5	91.2	88.9	87.7	89
Velocity,							
afm	459	454	448	460	443	463	453
dsfm	456	452	446	458	431	461	451
Flow Rate (dscfm)	233	229	225	231	218	234	228
VOC Emissions							
Concentration[1] (ppm)	73.5	55.8	72.0	63.7	60.5	46.6	62.0
Emission Rate[2] (lb VOC/Start)	0.0157	0.0115	0.0146	0.0135	0.0120	0.0099	0.0129
QA/QC Samples (ppm)							
Field Blank	5.1						
Ambient	12.5						

1 Concentration - average of duplicate samples.
2 lb VOC expressed as CH_3.

Exhibit B


NEW!
follow instructions for best results
READ DIRECTIONS BEFORE USE
duraflame
No Splash, No Flash!
fresh light™
with Natural Orange Oil
Fast Starting, Fresh Scent
32 FL OZ
(1QT) 946 mL
Liquid Gel Charcoal Lighter • Allume-barbecue En Gelée Liquide • Encendedor de Carbón de líquido gelatinoso
DANGER: MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. VAPOR HARMFUL.
FLAMMABLE. READ BACK PANEL FOR CAUTIONS AND EMERGENCY INSTRUCTIONS

CONTAINS Bifrex

duraflame. fresh light™

Liquid Gel Charcoal Lighter

- Safe, no splatter Liquid Gel, doesn't flash when lit
- 25% more BBQ starts per bottle than standard lighter fluid (when used according to package instructions)

DIRECTIONS:

1. SHAKE BOTTLE WELL BEFORE USING

2. Open cap by holding the top shoulder of bottle and flip open cap.
3. SQUIRT Liquid Gel on to center of piled charcoal, allowing liquid to travel down through the center and under pile. Apply 70 ml (2 firm squeezes of bottle) per two pounds of charcoal briquettes. Close cap by pressing firmly until it is secure.
4. LIGHT IMMEDIATELY Liquid Gel will light down through briquettes. The liquid gel will burn off cleanly, leaving the charcoal fully ignited. Begin cooking when the briquettes are mostly covered with gray ash.

CERTIFIED LOW VOC EMISSION PRODUCT

This product complies with South Coast Air Quality Management District Rule 1174. Ref. C96

DANGER ☠ POISON CONTAINS METHYL ALCOHOL. (METHANOL). Cannot be made non-poisonous. Vapor harmful. Avoid contact with skin and eyes. Use only outdoors in a well ventilated area. **FLAMMABLE MIXTURE:** Do not apply to burning or glowing coals. Store bottle upright in cool dry place away from direct sunlight or any heat source. **FIRST AID:** In case of contact with eyes flush thoroughly with water. If swallowed, call your physician, Poison Control Center or hospital emergency room for instructions to induce vomiting.

KEEP OUT OF REACH OF CHILDREN AND PETS.

Distributed by: **Duraflame, Inc.**
P.O. BOX 1230
Stockton, CA 95201
MADE IN USA

Patent Pending

Remove Here Abra Aqui

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LOT: 213\2